Introduction

An intensive care unit (ICU) considered to be primary mission at medical center in Taiwan. Patients will receive high-quality care in an intensive care unit. However, with limited critical care resources, if not make good use of ICU beds, it will influence in-hospital delay of patients and lead to emergency department congestion.

Part of the reason is that patients with prolonged ICU stays. According to the literature, 4% to 11% of patients admitted to ICU have a prolonged ICU stay. Furthermore, factors influencing length of stay in ICU include medical, social, psychological, and institutional.

This study will retrospectively analyze prolonged ICU stay rate and factors. According to factors influencing prolonged ICU stay, we will take action to improve. It is expected to enhance management performance of ICU beds.

Methods

This cross-sectional study used 2014 to 2016 electronic medical record from a Medical Center in Taiwan. The study sample included ICU adult patients who prolonged ICU stay over 14 days. We built up a team to improve, including intensive care unit, quality management center, and IT department.

First, we set up quality indicators, such as prolonged ICU stay rate and factors.

\[ \text{Monthly prolonged ICU stay rate} = \frac{\text{the number of over 14 days that subtract ICU admission date from ICU discharge date}}{\text{the number of ICU discharge}} \]

The definition of prolonged ICU stay factors included unstable condition, use of ventilator, condition deteriorated, comorbidity, repeated infections, waiting for tracheostomy, insufficient home care equipment, unwilling transfer out, short-handed, economic difficulties, insufficient home care skills.

Second, we developed IT system about long stay ICU to manage ICU beds. If ICU patients prolonged staying over 14 days or 28 days, the system will immediately send a message to physician. Physician must sign in HIS system to reply prolonged ICU stay factors (Fig1.). Otherwise, the system can analyze data and assist decision making.

Finally, we established step-down units, such as high care unit and respiratory care center, to improve prolonged ICU stay rate.

High care unit (HCU), 4 beds for the ICU bed turnover, be provided for stable patients that expected to transfer to the ward during the period of 3 days.

Respiratory care center (RCC), built 8 beds, be provided for patients that have active weaning from mechanical ventilation.

Results

We found that overall average prolonged stay rate in ICU was 11.96%, in MICU was 16.27%, in SICU was 9.8% during 2014 to 2015 (Fig2.), the main factor was unstable condition (29%), use of ventilator (22%), condition deteriorated (19%), and comorbidity (13%).

Using step-down units decrease the prolonged stay rate, there was 54 ICU patients transfer to HCU during 2015 Aug to 2016 Jun, 29 ICU patients transfer to RCC from 2015 Nov to 2016 Jun. Furthermore, overall ICU prolonged stay rate decrease 1.52%.

Conclusion

There are significant improvement in ICU prolonged stay rate, we use IT system to assist wards management, data collection, and analysis. Through step-down units method, it can makes the critical care service to needed patient.

References